Understanding generalisability from network-conscious service design projects

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Understanding generalisability from network-conscious service design projects

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Abstract

The influence of technology on value co-creation practices of service actors has been studied from a service encounter perspective, during or after technology introduction. We contribute to this existing research by introducing a *multi-actor* perspective to study such changes *prior* to technology deployment. We provide two illustrative cases that show how this can be done. In addition, we study the generalisability of findings from such research projects, through an exploratory qualitative comparison of the projects. We make a second contribution by providing five contextual aspects for other researchers to use when assessing 1) generalisability of our findings and 2) to what contexts their research results can be transferred. Finally, we make a third contribution by positing that literature on roles and role change supports service researchers and designers to make sense of the ways in which service actors perceive that technology deployment will influence value co-creation in service systems.

KEYWORDS: service visualisations, value co-creation, exploratory qualitative comparison, generalisation from qualitative research, Role Theory

Introduction

Technological advancements create new possibilities for value co-creation (Ostrom et al., 2015; Bantau & Rayburn, 2016). The effect of such deployment of technology on value co-creation *during* or *after* technology deployment has been studied extensively. This existing knowledge can be extended by developing ways to understand potential changes *before* the technology is deployed. Understanding which changes are anticipated helps to pre-emptively work on facilitating expected positive changes and counteracting negative ones. Furthermore, research in service marketing and service design is increasingly shifting its focus away from a (dyadic) service encounter perspective to a network perspective. Still, little is known about how value is co-created in such networks (Figueiredo & Scaraboto, 2016). Therefore, we advocate for *network-conscious* service design that does not evaluate service

interactions only with respect to oneself, but makes users reflect on consequences for other actors in the network (Čaić et al., 2018). Such an approach shifts the service foci from an individual actor toward networks of actors involved in value co-creation and gives a finder-grained understanding of consequences for an individual versus a collective.

In this paper, we present two interventions in projects in which we have been involved, that aim to study (1) potential effects of technology introduction on value co-creation (2) from a multi-actor perspective (3) prior to the deployment of technology. The interventions used a designerly approach and included different visualisations of the future service. More specifically, they built on the participatory approaches in service design (Holmlid, 2012), mapping techniques (e.g. Morelli & Tollestrup, 2006), and different types of visualisations that are commonly used in service design (Diana et al., 2009), and aimed to make actors' implicit conceptualisations of network contexts more explicit. To the best of our knowledge, there is no empirical data from similar research projects. Our first contribution is thus the introduction of a *multi-actor* perspective when studying potential changes in value co-creation and the suggestion to study such changes *prior to* technology introduction. We provide two illustrative research projects to exemplify how this can be done.

The limited empirical work leads to the limited knowledge about how the results from network-conscious service design projects can be generalised and to what extent they can be used in similar research projects. We present an exploratory qualitative comparison of these two research projects that show several similarities in context. By context we not only refer to physical surroundings or service setting of the project, but also the way in which informants understand the service network(s) they are part of as well as the perspective and (designerly) approach taken during the intervention. Based on the comparison we make our second contribution, by providing five contextual factors that function as guidelines to assess similarity between research projects. These guidelines will help researchers determine when transferability of research knowledge to, from or between projects like ours is possible on the grounds of context similarity. In addition, we noticed that we could use the concept of roles and role change from Role Theory to make sense of how informants talked about changes in value co-creation that they foresaw. We could do this for both projects, in spite of contextual differences between them. Our third contribution is therefore that we suggest that vocabulary for roles and role change from Role Theory literature helps researchers and designers to articulate and make sense of what service actors anticipate as effects of technology deployment on value co-creation.

Background

Networks of value co-creation

Services are no longer analysed as a result of dyadic service provider–customer interactions, but rather as co-created through interactions among networks of interdependent actors (e.g. Gummesson & Mele, 2010; Briscoe et al., 2012; Jaakkola & Alexander, 2014). In the domain of service innovation, the network perspective is receiving more and more attention (Lusch & Nambisan, 2015). Such networks of actors comprise service systems, which are complex configurations of people, information, technologies and institutions (Maglio et al., 2009). Moving away from dyads towards A2A (actor-to-actor; Vargo & Lusch, 2011) webs brings us closer to a holistic understanding of how service systems function. Yet, it also adds another layer of complexity by including multiple human actors with their idiosyncratic understandings of value (Wetter-Edman et al., 2014) and different conceptualisations of their value-creating networks and network roles (Gummesson & Mele, 2010).

Value co-creation with technology

When it comes to technology as part of a service, existing research discusses the transformative role of information technologies (e.g. Green et al., 2016; van Doorn et al., 2017; Huang & Rust, 2018). Different terms are used for the relation between technology and service, such as: technology-based services (Sandström et al., 2009), technology-enabled value co-creation (Patrício et al., 2011; Breidbach et al., 2013), technology-based (remote) service encounters (Sur, 2008), Service Encounter 2.0 (Larivière et al., 2017). These works take a service encounter perspective to study the effects of technology on value co-creation and to evaluate these effects during and/or after the deployment. Researchers are trying to get a better understanding of how new value propositions (Skålén et al., 2015) will impact the interplay between actors and resources in future technology-augmented networks, yet actor valorisations of future service scenarios remain scarce. Researchers need to look for new ways to engage with diverse set of service actors and make them envision, discuss and evaluate possibilities for value co-creation and co-destruction (Echeverri & Skålén, 2011).

Visualisations of future services

Service design has developed various types of representations that can be used to envision future services. Static representations such as visualisations (Diana et al., 2009) as well as immersive representations—what Blomkvist (2016) calls ongoing prototypes—are ways to envision future services. Making and using such representations is valuable because it is a way of learning about these possible futures (Blomkvist, 2014). A drawback of these methods is that they focus (only) on suggesting different alternative solutions, rather than structurally describing consequences for value co-creation, and providing possibilities to evaluate these. Evaluation techniques in service are scattered, and often focus on service quality, service experience or operations, and rarely on the evaluation of a suggested new service (Foglieni & Holmlid, 2017). Evaluations of touchpoints, service encounters, and customer journeys are common in service design. Some of the methods used are situated in approaches and methodological frameworks, such as cooperative design (Schuler & Namioka, 1993), that may allow to go beyond the individual perspective when evaluating effects of technology deployment in service systems (e.g. Greenbaum & Kyng, 1991). Hence, it seems possible to perform evaluations of future services from the perspective of all actors in a service network.

Generalisation in qualitative research

Results of qualitative research should both provide deep understanding of a phenomenon and inputs for practical applications for this understanding (e.g. Thornberg & Fejes, 2015). To be valuable for researchers and practitioners, findings should thus not only be valuable for the context under study, but also in similar situations. Such generalisations of knowledge in qualitative research differ from generalisations in quantitative research and there are different perspectives from which to consider this topic (e.g. Merriam, 1998; Larsson, 2009; Maxwell &Chemiel, 2014). Rather than seeing results as truths that can be generalised to a certain extent, outcomes of qualitative research are seen as perspectives, or propositions that are tentative and have sensitivity for specific situations (Thornberg & Fejes, 2015). The term transferability is often used instead of generalisability (ibid., 2015), where the possibility for transferability of research knowledge from one project to another is related to similarity between cases (Lincoln & Guba, 1999, p 404). This is form of generalisation is also referred to as *case-to-case transfer* or *user generalisation* (Merriam, 1998, p. 211). User generalisation means that the person who intends to use research knowledge from other projects to explain dynamics in their own project assesses whether importing the research knowledge in question is possible. They make such assessments by comparing the sending and receiving context (Larsson, 2009). Context similarity is an indicator for transferability, it is not a guarantee (Larsson, 2009). Another perspective is transferability through pattern recognition, which "can happen even if the context-to-be understood is different from the original study"

(Larsson, 2009, p.35). It happens when "someone who is familiar with a piece of research realizes that the original interpretation 'fits' cases they have met" (Larsson, 2009, p.34).

Roles and Role Theory in service research

The concept of roles through the lens of the Role Theory (see e.g. Biddle, 1986; Guirguis & Chewing, 2005) has been used in service research before. Especially the dramaturgical perspective (e.g. Goffman, 1959) on roles is popular. Baker and Faulkner (1991) have suggested a network perspective on roles, where roles are not tied to one specific position in a social system. Building on this view, Akaka and Chandler (2011) proposed that roles instead could be seen as resources that are used for value co-creation, thereby using a more structural view on roles. Several tools and methods are available in service design to document *existing* roles (Sangiorgi, 2009). Theatre-based techniques such as role play have been applied to explore *envisioned* roles for future situations of service (e.g. Arvola et al., 2012). Some of these works build on earlier research in this area from participatory design (e.g. Halse et al., 2010). For more on the use of roles and role theory in design and service research, see Overkamp and Holmlid (2017).

Descriptions of the research projects

We first introduce two research projects that are used in the exploratory comparative analysis. These projects were part of the research education of the first two authors. The authors' realisation of the relatedness of these particular two projects developed through interactions at meetings in the Service Design for Innovation Network and conferences.

Research Project 1 – Software for troubleshooting trucks and buses

The first project is a service development project that aims to improve an existing Business-to-Business (B2B) service aimed at troubleshooting and repairing trucks. The time that a truck is broken (downtime) is costly, because trucks are needed to make the deliveries that provide revenue for a transportation company. Speeding up the process of troubleshooting and repair, can limit downtime. The truck manufacturer that we collaborated with is working on research and development of software technology that can provide step-by-step guidance during troubleshooting. It will be possible to use this software both in the workshop and remotely, before the truck is in the workshop. The remote troubleshooting would form a new touchpoint in the service process.

We performed 26 semi-structured interviews (Creswell, 2014) with actors in the current service system for troubleshooting and repair. The aim was to evaluate what consequences the service actors saw for their practices if the remote and workshop guided troubleshooting would be implemented. One of the authors conducted the interviews in spring 2016, with customers, workshop employees, and roadside assistance operators. We did not have the opportunity to interview drivers.

The interviews consisted of two parts. The first part focused on the current practices, what would happen today in case some truck experienced technical problems and who would do what. We then introduced the service development project using a written description and a visualisation of the service process as imagined by the truck manufacturer (see Figure 1). The second half of the interview focused on what the interviewees saw as consequences for (1) their own practice and (2) the work of other actors in the service system.

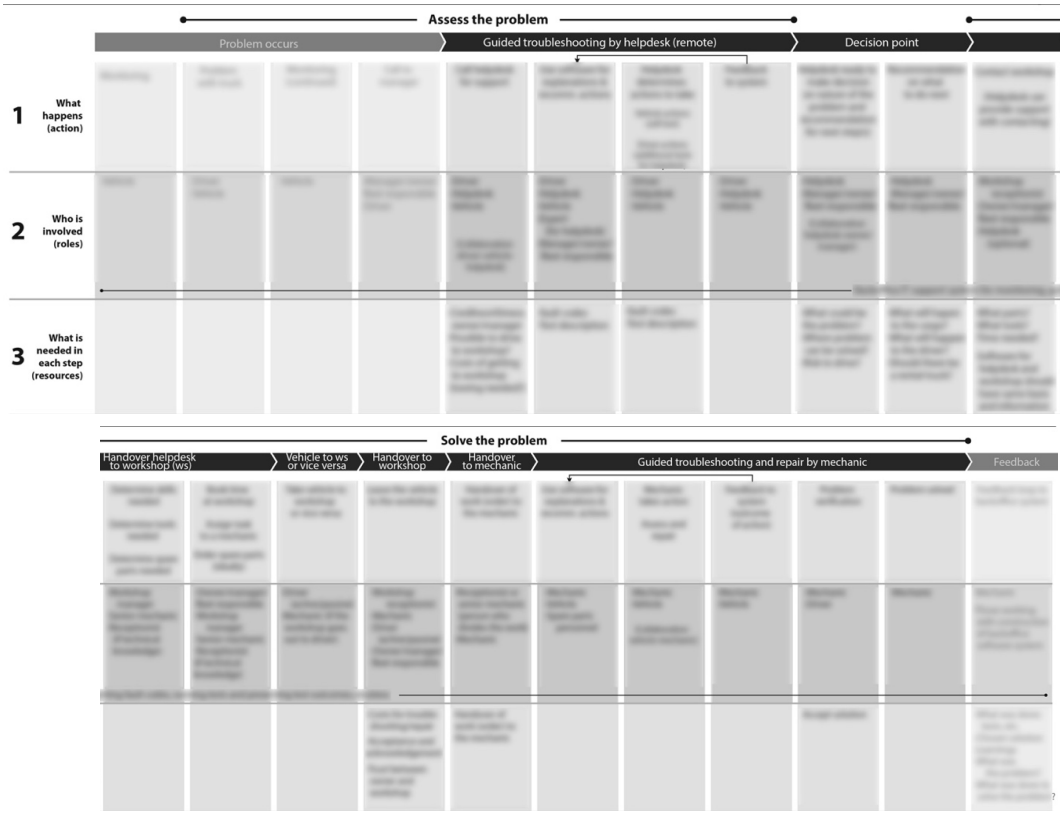

Figure 1: Visualisation of the future service process used during interviews with service actors. It shows who does what in which part of the process.

Research Project 2 – Socially assistive robot

The second project investigates a future Business-to-Consumer (B2C) service within the elderly care setting, which currently faces many challenges, including rising number of elderly persons and shortages of professional care staff (European Commission, 2015). In particular, the case focuses on socially assistive robots[1] which hold strong promise to enhance the well-being of the elderly and to alleviate the burden of caregiving networks. In this project we were interested in understanding future service scenarios for socially assistive robots and their effect on value co-creation in care-based networks.

With the aim to investigate how socially assistive robots disrupt already established care-based networks and how informants envision future technology-enhanced service scenarios, we conducted in-depth generative interviews (Sanders, 2000) augmented with a card activity (i.e., "Contextual Value Network Mapping"; Čaić et al., 2018). Over the course of 10 months, one of the authors interviewed nine elderly persons, seven formal caregivers, and nine informal caregivers.

The informants were engaged in a generative "Context Disruption" interviewing protocol consisting out of four steps: (1) Contextual value network mapping – *Current service*; (2) Active immersion; (3) Introducing "disruption" (i.e., socially assistive robot); (4) Contextual value network mapping – *Future scenario*. The data material thus consisted of the informants' network visualisations and transcriptions of these interviews. The semi-structured nature of the interview protocol helped capture rich descriptions of informants' caregiving experiences within existing network contexts and expectations of changing caregiving roles for diverse

[1] Socially assistive robots are autonomous devices that understand social cues through facial and voice recognition technology and can assist their owners with health monitoring and household activities, to prolong their independent living (KPMG, 2016; Robinson et al., 2014).

network actors. Simultaneously, the material facilitation tool, that was part of the generative technique that we employed, elicited their tacit knowledge (Polanyi, 1967), through network visualisations (see Figure 2).

Figure 2: Visualisations of care-based networks

Exploratory qualitative comparison

The outlined research projects formed the starting point for an exploratory qualitative comparison of the projects. Among the reasons for starting the comparison were identified similarities in both projects in terms of what we were trying to understand and how we approached this. The aim of the comparison was to provide researchers with guidelines helpful for assessing similarities and differences between research projects in order to determine the extent to which research knowledge can be transferred between projects. This iterative approach combined individual reflections with group discussions and resulted in the development of fitting criteria for making comparisons in order to determine similarity between the projects (see Figure 3). The remainder of this section details the approach during each step, the reasoning behind them as well as their outcomes.

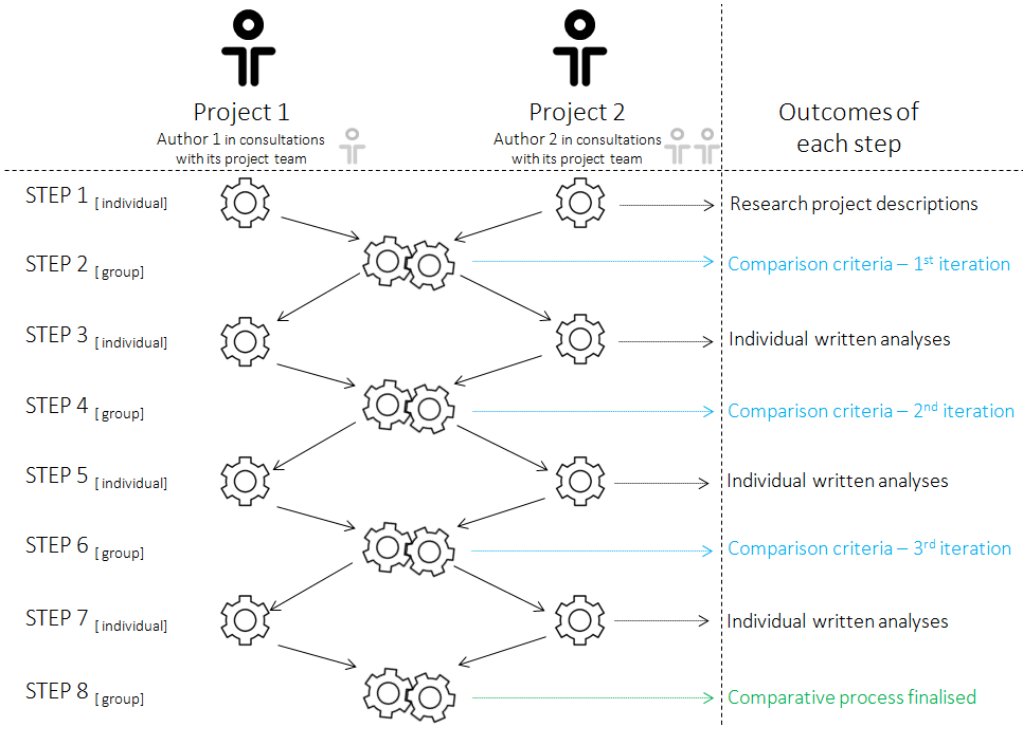

Figure 3 - Overview of the process of the exploratory qualitative comparison.

STEP 1: Getting familiarised with the research projects
The principal researchers from each of the outlined research projects prepared a detailed written description of their respective projects. The aim of this step was to reach a shared understanding of the specificities of the service setting, employed methods, and nature of the findings of each of the two projects among the collaborators (i.e., the author team). The written project descriptions were shared among the collaborators to serve as a basis for a group discussion.

STEP 2: Group discussion
Since the collaborators were geographically dispersed, we organised a Skype session to discuss both projects to improve the understanding based on the written project descriptions. This way, we had the opportunity to clarify elements which remained unclear and reach an even higher level of mutual understanding. During the conversation, several characteristics were discussed that could serve as starting point for comparing the projects, ending with a decision regarding which criteria to use for the individual comparison. The outcome of this step was the first iteration comparison criteria comprising: (1) *General aspects - such as aim and framing of the project, (2) Method-related aspects, and (3) Results-related aspects.*

STEP 3: Individual initial comparisons

The first two authors individually reflected upon similarities and differences between the two projects focusing on the comparison criteria defined in step 2. The aim of this step was to test whether the first iteration criteria are useful for understanding similarities and differences between the projects. Individual comparisons were then shared with all the collaborators to further reflect on them. Table 1 combines and summarises the individual comparative analyses and reflections shared by all the collaborators.

Table 1 – Project comparison based on the first iteration criteria

Comparison criteria		Project 1	Project 2
1. General aspects - such as aim and framing of the project	**Service setting**	Business-to-Business service (truck/bus repair)	Business-to-Customer service (elderly care)
	Technology	Guided troubleshooting	Socially assistive robots
	Overall research interest	Understanding how knowledge for service implementation can be developed throughout entire service development	Understanding of future service scenarios with robots and how this leads to changes in value co-creating networks
	Aim	Investigate how informants (1) understand current practices and processes for troubleshooting and repair of trucks; (2) envision potential changes to practices and processes due to the technology deployment	Investigate how informants (1) perceive robots disrupting already established care-based networks; (2) envision future technology-enhanced service scenarios
2. Method-related aspects	**Interview structure**	(1) Discussed current work situation and processes for troubleshooting; (2) Introduced the project and the software, through text and visual; (3) Discussed future situation with software, and influence on work of informant and other actors in service system	(1) Contextual value network mapping – *Current service*; (2) Active immersion; (3) Introducing "disruption" (i.e., socially assistive robot); (4) Contextual value network mapping – *Future scenario*
	Informants	Workshop managers, receptionists, mechanics, transport planners, roadside assistance	Elderly people, formal, and informal caregivers
	Involvement of informants	Articulated existing work processes Evaluated future service process as envisioned by technology developers	Articulated their existing network relations using tangible tools (actor cards) Articulated understanding of changes due to technology deployment (again mapped by informants using actor cards)
3. Results-	**Data for analysis**	Interview transcripts	Visualisations service networks; Interview transcripts

related aspects	**Intended use of the outcomes**	Input for continued design and development of the software and decisions regarding involvement of different actors in the process	Determine deployment introduction strategy and how to prioritise development of different robot functions
	Effects of technology on future roles	Expected extension of current role(s) to include remote troubleshooting Expectations of changes in interaction of mechanic with troubleshooting software	Expectations about changing roles of network actors Expectations about robot roles

STEP 4: Joint comparative session

In another Skype session, collaborators explained and discussed the individual comparisons on the three aspects defined in step 2. The similarities and differences can be summed up as follows:

1. **General aspects** included the analysis of the service setting, the nature of the technology planned to be introduced, the overall research interest and the aim of the study. While the service settings and planned technology deployment were different, both research projects were interested in i) how potential users perceived their current value co-creation practices and ii) how they envisioned their future technology-enhanced service scenarios.
2. **Method-related aspects** included the dissection of the research approach comprising the interview structure (including the nature and setup of the intervention), sample characteristics, and the way in which informants were involved in the study. The main similarity was in the way how interview protocol was set up: i) informants discussed their current contexts, ii) informants acquainted themselves with the technology, and iii) informants evaluated their future service scenarios (envisioning effects of the technology).
3. **Results-related aspects** included the analysis of the type of feedback that the informants gave (i.e. effects of technology on their roles and suggestions for improvement) and the role that the informants attributed to the technology. The similarities were mostly detected in the network-conscious discussions of current and future service roles, while some differences were detected in the way informants spoke about the roles (e.g. work-related vs. roles in daily life).

The group discussion resulted in the second iteration of comparison criteria: (*1) Characteristics of the existing service roles, (2) The nature of the (research) intervention, and (3) The outcomes of the studies.*

STEP 5: Individual comparisons

The first two authors prepared their detailed analysis of similarities and differences between two projects based on the comparison criteria defined in step 4. The aim was again to test whether the aspects that were defined were helpful for understanding similarities and differences of the projects and whether the resulting comparisons allowed us to talk about the transferability of knowledge. Table 2 includes a digested version of the two individual comparative analyses enriched by the reflections of the entire author team.

Table 2 – Project comparison based on the second iteration criteria

Comparison criteria		Project 1	Project 2
1. Characteristics of the existing service roles	**Informants' understanding of their current roles**	Formalised roles (assigned by job function)	Mostly phenomenologically defined (in case of formal caregivers, roles are formalised)
	Dyadic or network defined roles	Network interactions (roles work together as a team in achieving job-related goals)	One-to-one interactions (e.g. a role of a daughter is defined with respect to the achievement of elderly person's personal goals) Network interactions (some roles are defined on a network level – e.g. network coordinator)
	Types of roles	Job-specific roles (related to institutionalised positions in the service systems)	Context-specific or (segment of) life roles (roles within the defined elderly-care network)
2. The nature of the (research) intervention	**Visualisations made by**	Researcher in collaboration with technology developers	Informants (during the interview)
	Type of visualisations	Diachronic (process)	Synchronic (network map)
	Use of visualisations	To trigger articulation of informants' knowledge	To trigger articulation of informants' knowledge As outcome of the interview
	Portrayal of technology	Software introduced as tool that provides information and guidance during service process	Robot is introduced as a non-human actor
	Agency of technology developers in determining the role of technology	Software technology developers presumed and presented the role of the software through its functionalities	Robotic technology developers presumed and imposed robot's role through offered functionalities
3. The outcomes of the study	**Informants' understanding of their future roles**	Anticipations of changes in own and other actors' roles	Anticipations of future roles in a network-conscious way (impact on their own and other actors' roles)
	Role-related behaviours	Role acceptance Role anxiety Role mitigation	Role acceptance Role anxiety Role resistance
	Evaluations of the technology	Informants perceived technology as a system of information and cognitive resources and had different opinions	Informants perceived the technology both as a system of cognitive and affective resources, but also as an actor with its

	about how well they could integrate these resources for value co-creation	own role within the network

STEP 6: Joint comparative session

In another Skype session, collaborators reflected on the second iteration comparison criteria:

1. **Characteristics of the existing service roles** included the analysis of informants' understanding of their current service-related roles (institutionalised vs. phenomenologically defined) and the breadth and type of their roles (working life/job-specific only or more general (segment of) life roles). While informants in Project 1 understood and described their current roles as institutionalised (determined and influenced by their job position and work-related tasks), informants in Project 2 perceived their roles more loosely, phenomenologically defined (determined by the needs of their care-related context).
2. **The nature of the (research) intervention** analysed the use of visualisations. In particular, how and by whom the visualisations were made, type of visualisations used (diachronic vs. synchronic) and the advantages and disadvantages of each depending on their purpose. The key similarity was that both research approaches leveraged visualisations as a generative tool aimed at eliciting informants' knowledge. However, they differed regarding the type of visualisation (*flows* vs. *maps*) and the involvement of informants in the creation of the visualisations.
3. **The outcomes of the study** covered what kind of understanding informants developed about the effects of the technology on their and other actors' future roles, how informants talked about role acceptance (willingness to accept/advocate future roles) vs. role-averse behaviours (e.g. having role anxiety and expressing hopes to mitigate future roles). Many similarities were detected based on these comparison criteria, with informants expressing their expectations for and (often) discomfort with their future value co-creation roles.

Based on the group discussion, the comparison criteria were further developed into the third iteration criteria: *(1) Studying effect of technology on value co-creation between actors from a multi-actor perspective prior to technology deployment, (2) Use of service visualisations as a way to facilitate service actors in articulating their understanding of changes in value co-creation, and (3) Use of Role Theory to articulate how informants talk about changes in value co-creation.*

STEP 7: Individual comparisons

Once again, the first two authors made their individual dissections of the research projects guided by the comparison criteria defined in step 6. The aim of this step was to see whether we had found a set of criteria by which we could separate similarities and differences in the analysed projects. Finding these criteria would allow us to demarcate and discuss what parts of the results from the one project would have surfaced in the other project as well. In other words: what parts of the research knowledge developed in the one project would be transferable to the other. And what research knowledge cannot be transferred because the context in which it was developed it (too) different from the other project (i.e. the receiving context). The outcomes of this step were individual written comparisons which were then shared with the remainder of the author team. Table 3 shows the combined analyses of the first two authors augmented by the feedback from all the collaborators.

Table 3 – Project comparison based on the third iteration criteria

Comparison criteria		Project 1	Project 2
1. Studying effect of technology on value co-creation between actors from a multi-actor perspective prior to technology deployment	**Aim**	Investigate how informants understand current value co-creation practices and how they envision changes to these practices due to the introduction of the technology	Investigate how informants conceptualise their current roles and value co-creation in a networked context and how they anticipate their future service practices to change once the technology is introduced
	Nature of technology impact	Technology deployment expected to affect value co-creation practices both for actors who directly interact with it and those who interact with it indirectly	Informants discuss both the value co-creation potential of future robotic technology with respect to self and other network actors
	Stage in new service development	Evaluate future service process that was envisioned by technology developers prior to its introduction	The expectations of future service scenarios (processes and practices) were evaluated prior to technology deployment
2. Use of service visualisations as a way to facilitate service actors in articulating their understanding of changes in value co-creation	**Intent of using visualisations**	Facilitate informants in (1) developing their understanding of the envisioned future service process and (2) their evaluation of potential effects of technology deployment on existing value co-creation processes	Facilitate informants in (1) understanding their current value co-creation practices in their care-providing networks (2) sharing their anticipations of future service scenarios where technology impacts their current network contexts
3. Use of Role Theory to articulate how informants talk about changes in value co-creation	**Coping with future roles**	Different stances towards future role, depending on (mis)match between resources that informants have today and resources they are expected to integrate after technology is deployed	Combination of role acceptance and role anxiety/resistance depending on the evaluations of value co-creation and co-destruction potential of planned technology introduction
	Resources needed to be shaped	Development of additional skills for existing service actors in order to enact future role Development of technology as resource to enable integration with actors' existing resources	Additional skills needed to enact future roles Technology is expected to be personalised to fit the needs of diverse network actors

STEP 8: Joint comparative session
The group discussion yielded the following conclusions:

1. **Studying effect of technology on value co-creation between actors from a multi-actor perspective prior to technology deployment:** Our analysis suggests that despite nuances in sub-criteria (e.g. the degree to which technology developers had an influence on the portrayal of technology), both projects evaluated i) the effect of technology, ii) on networked value co-creation practices, iii) from a multi-actor perspective, iv) prior to technology deployment.
2. **Use of service visualisations as a way to facilitate service actors in articulating their understanding of changes in value co-creation:** The use of service visualisations related to the way in which the intervention was set up in both projects. Again, while the projects showed two variations of use of visualisations (synchronic/diachronic; made my informants/made by research and technology developers) they were consistently used with an aim to i) understand current service scenarios and ii) anticipate future service scenarios (through changes in value co-creation)
3. **Use of Role Theory to articulate how informants talk about changes in value co-creation:** The use of Role Theory concerned how the vocabulary of this theory can be used to articulate how informants talk about how they expect technology deployment to influence the roles in the service and how value co-creation changes as a consequence of that. For instance, that they felt that they do not have the resources needed (e.g. knowledge) in order to perform their expected future role, which caused anxiety.

Analysis and discussion

We started this paper with the observation that research on effects of technology on value co-creation has so far looked at these effects during or after implementation and from the perspective of service encounters. To the best of our knowledge, effects of technology on value co-creation have not been studied from a multi-actor perspective, prior to deployment of the technology in question. The first contribution of this paper is thus the introduction of this alternative approach and the presentation of two illustrative research projects that show how this approach can be applied.

Furthermore, we investigated the possibilities for transferability of the findings of two research projects through an explorative qualitative comparison. A summary of the evolution of these comparisons during the three iterations is presented in Figure 4.

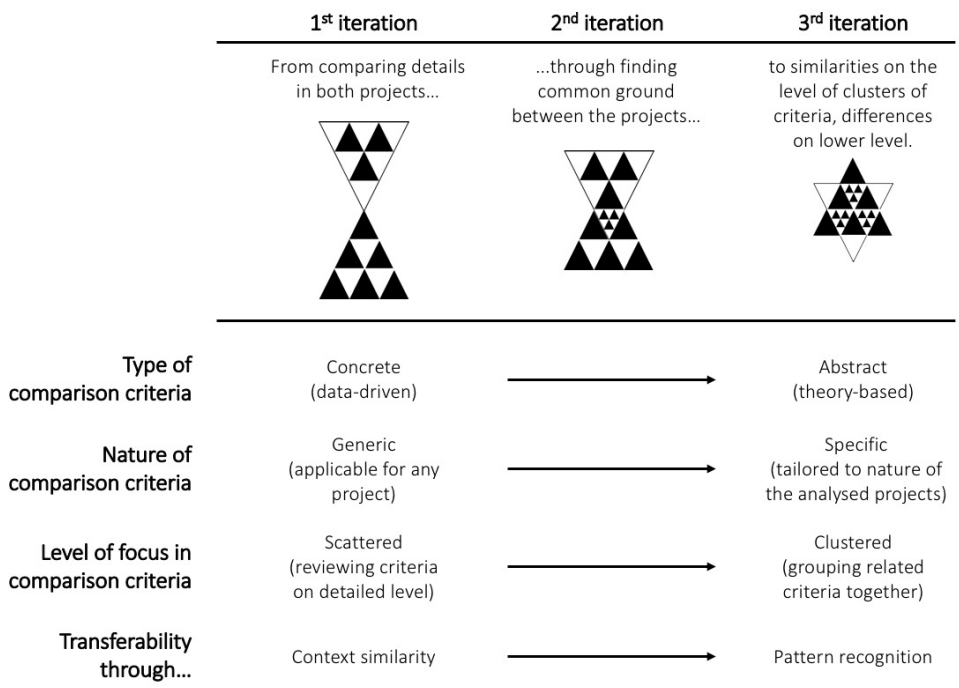

Figure 4 – Evolution of the project comparisons over the three iterations

The outcome of this comparison showed that the projects are comparable on the high-level criteria presented in Table 3. However, on a more detailed level, the contexts of the projects are different. Firstly, the project around socially assistive robots is situated in a B2C healthcare setting, while the software support is developed for B2B services. Secondly, the type of technology is different in both cases. Thirdly, the informants in the projects had a different understanding of their own role and the role of other actors. Fourthly, the aim that either project had with the intervention differed: *articulation* of existing and future network relations in the healthcare project, *evaluation* of a future service process that was envisioned by technology developers in the other project. Finally, Project 1 used what Diana et al. (2009) called *flow*-type visualisations, while *maps* (ibid. 2009) were used in Project 2. We therefore posit that transferability between these projects is not possible from the perspective of context similarity. However, we believe that the five contextual factors discussed above are of value for other researchers, working in projects similar to ours, when assessing the generalisability of their research findings.

Comparing these cases made us realise that it *is* still possible to discuss transferability, but from the perspective of pattern recognition. Vocabulary for roles and role change, from Role Theory, helped to articulate and make sense of *how* informants talked about changes in value co-creation. This was identified in Project 1 (see also Overkamp & Holmlid, 2017) and could be used for Project 2 as well. Based on this finding we suggest that vocabulary about roles and role change from Role Theory literature helps to articulate and make sense of what service actors anticipate as effects of technology deployment on value co-creation.

There is not much previous work regarding taking a multi-actor perspective that makes informants conscious about their service *network* to understand potential consequences of technology deployment on value co-creation processes. Hence, it was difficult to formulate aspects for a comparison a priori. Therefore, we decided to have an explorative and qualitative process. For us, the process of performing the exploratory qualitative comparison of our two projects helped us to achieve a better understanding of the similarities and differences in the projects, but should be considered unique for our situation and the nature of the projects we are involved in. It cannot be seen as a general recipe for arriving at an

understanding of transferability and the grounds upon which research knowledge can be generalised from one project to another. Being aware of this, we have described the process of our exploratory qualitative comparison and the context criteria that were discussed during this process as clearly and detailed as possible. This description provides guidelines for researchers to compare projects similar to ours, while at the same time allowing readers to take other perspectives and make different interpretations than we did.

Conclusion

We observed a growing interest for a network perspective in service research, combined with a need for more knowledge regarding how value is co-created in such networks. When it comes to the influence of technology on co-creation this has mostly been studied from service encounter perspective, during and after deployment. We made a first contribution by introducing a *multi-actor* perspective to study effects of the technology deployment on future value co-creation, *prior* to the technology deployment. We provided a detailed description of two illustrative research projects that show how this can be done. In these projects we used service visualisations to facilitate service actors in articulating the changes in value co-creation they foresaw.

In addition, we performed an explorative qualitative comparison of the two projects, where we at first focussed on whether transferability was possible through context similarity. We concluded that research knowledge cannot be transferred from the one project to the other on those grounds. At the same time, we found that a pattern that was identified in one project was recognised in the other project: in both cases Role Theory vocabulary proved useful to articulate how service actors understood potential changes that would follow from the deployment of technology.
Through the explorative qualitative comparison, we made a second contribution by suggesting five contextual aspects that researchers can use as guidelines to explore transferability of research knowledge: (1) whether visualisations of future services are used in order to facilitate service actors in articulating their understanding of value co-creation in those situations, (2) whether a multi-actor perspective is adopted on such value co-creation to make informants conscious about their service network, (3) whether the effect of technology on value co-creation is studied prior to its deployment, (4) whether the projects are located within the same service setting, and (5) whether informants in the two projects have the same understanding of how their roles in the service system are defined. Using these five criteria, researchers that study effects of technology on future value co-creation from a multi-actor perspective prior to deployment can determine (1) whether it can be argued that it is likely that their findings would have surfaced in either of our projects and/or (2) in what contexts their findings are likely to be valid too, because of similarity in terms of these five context criteria. We made a third contribution by suggesting that vocabulary for roles and role change from Role Theory literature is useful to make sense of and discuss how service actors talk about their expectations of how introduction of technology will change value co-creation.

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